Treatment Integrity and School Based Autism Interventions

Mike Miklos
PATTAN
National Autism Conference
Penn State University
2017

Pennsylvania Training and Technical Assistance Network

Assumptions

- All behavior occurs in a context
- Behavior is regular and predictable
- Behavior is predictable only in relation to contexts

The Checklist Manifesto

- Atul Gawande (2009) reports on the simple use of procedural checklists:
  - Checklists used by nurses treating pain symptoms at John Hopkins University Hospital reduced from 41% to 3% the likelihood of a patient's enduring untreated pain
  - With use of checklists, pneumonia (as a result of medication treatment for patients on mechanical ventilation), fell from 70% to 4%. Consistently propping the patient at the right angle solved the problem.
  - *Sully Sullenberger's remarkable landing (2009) in the icy Hudson was accomplished through rigid following of procedural checklist (practiced over 150 years of total experience.)*

Educational Interventions and Autism

- Schools provide a major source of educational experience for children and young adults with autism spectrum disorders
- Most studies (91%) of interventions conducted in schools show positive results (Machalicek et al., 2008)
- Many of the interventions provided in schools may be highly effective
- The National Autism Center's Standards report (2009, 2016) suggests that ASD interventions derived from Applied Behavior Analysis have the most support

Most Interventions Provided in Schools are Not Published

- The actual average level of effectiveness of day to day school based interventions is not known
- Given that published studies require very high standards and attention to detail, the success rate of *un-researched* school interventions for ASD populations is probably much lower than that provided by Machalicek et al., 2008

The Reason Most Interventions Fail (McIntrye, et al. 2007)

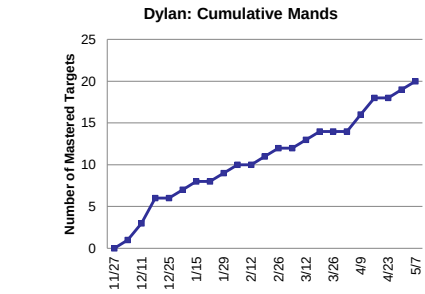
- **They are not delivered consistently in the way they were designed**
- Teachers fail to implement interventions with accuracy despite receiving high levels of initial training (e.g., DiGennaro et al., 2005).
- Student problem behaviors are negatively correlated with treatment accuracy, such that low levels of problem behavior are associated with high levels of treatment integrity (DiGennaro et al., 2005, 2007; Wilder, Atwell, & Wine, 2006).

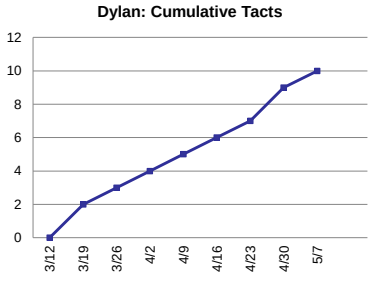
Treatment Integrity and Autism Interventions

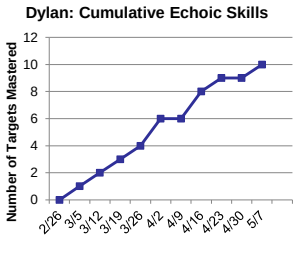
- Common problem: changes in student behavior are not measured
- Even more common problem: failure to measure the way interventions are run:
  - How often are interventions run?
  - Are the interventions designed so they can be run consistently?
  - Are they actually run as they are designed?

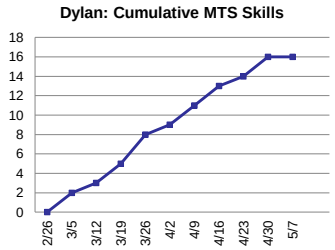
To Make Sure Interventions Work

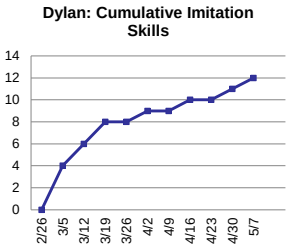
- Measure outcomes
- Measure treatments
- Notice change over time in behavior with consistency of intervention



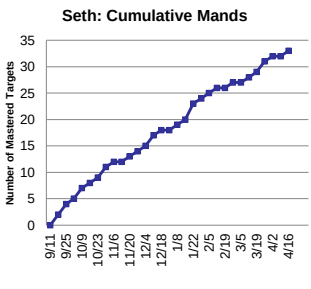


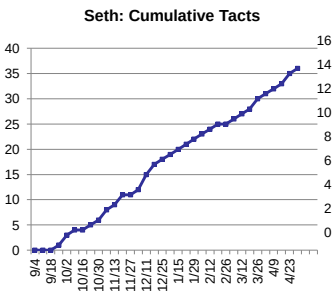


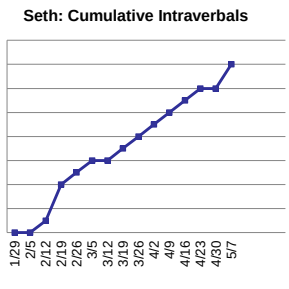


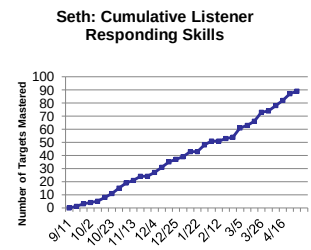


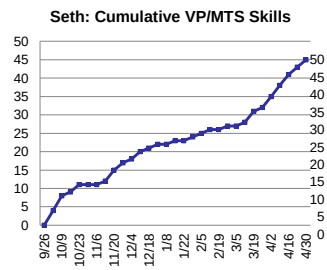
Total Cumulative Skills in 20 weeks: 68 (20 Mands)

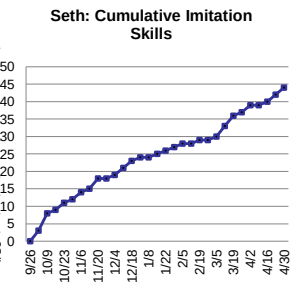












Total Cumulative Skills in 31 weeks: 261

Treatment Integrity (Livanis, et al 2013)

- If treatment is not implemented with integrity practitioners cannot realistically evaluate the effects of an independent variable on a dependent variable (Kazdin 2011)
- Implementation of high rates of treatment integrity is associated with positive treatment outcomes (DiGennaro, et al 2005, 2007)
- Lack of treatment integrity may be a violation of IDEA

Some Treatment Integrity Issues:

- Adherence (fidelity)
- Exposure
- Quality of delivery (qualitative aspects)
- Program differentiation
- Participant responsiveness

Components of Treatment Integrity (Livanis, et al 2013)

- Treatment adherence
- Agent competence
- Treatment differentiation
  - Treatment must have discernible effect from other treatments
  - Treatment drift as a related issue

Other Aspects of Intervention Related to Treatment Integrity (Livanis, et al 2013)

- Treatment complexity
- Time necessary to implement
- Materials
- Rate of change
- Number of agents
- Treatment acceptability

Some Methods to Complete Treatment Integrity

- Performance feedback
  - Direct observation
  - Video observation
- Consultee training
  - Manualized treatments and intervention scripts
- Permanent products
- Self reporting
- Self monitoring

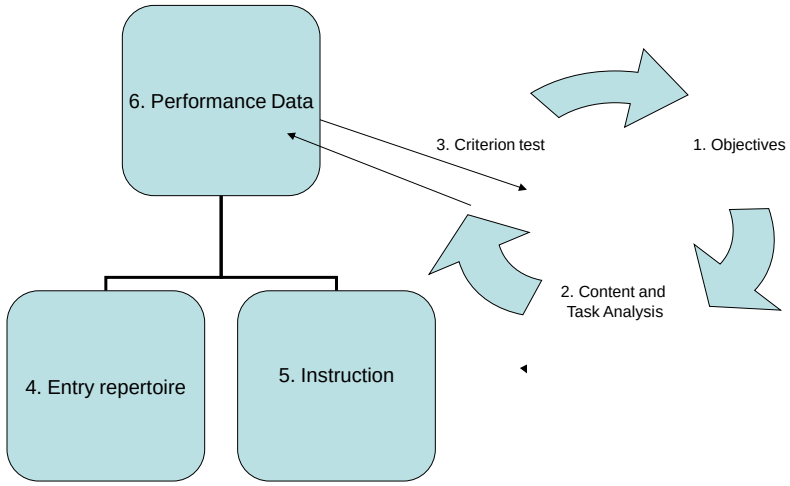
Measuring Treatment integrity

- Process should be designed to be brief
- Operational definition of treatment and components
- Reliability of observation (take data with inter-observer agreement)

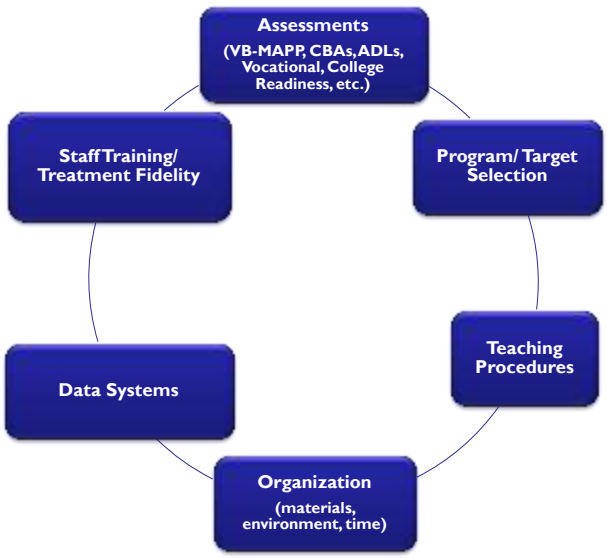
Effective Treatment and Integrated Programmming

- Procedures and processes outlined a priori
- Procedures and processes derived form an empirical data base
- Effects of procedures graphed daily

Markle and Tiemann's System of Instruction (1967)



Program Components Fit Together



Systematic Instruction and Autism Interventions

- Identification of meaningful goals that are socially valid (what to teach).
  - Communication skills- requesting wants and needs
  - Social Skills-initiating and responding to social bids
  - Appropriate play/leisure skills
  - Self-help, completing independent activities

Skills Needed by School Personnel to Implement Effective Practices in Autism Support Programs

- Skilled management of social and physical environments to allow effective instruction
- Assessment skills
- Ability to monitor progress through data organization and analysis
- Consistent skill in delivering instructional protocols
- Dynamic responsiveness to student performance

Levels of Treatment Integrity

- Systems
  - Site review
- Instruction
  - Scheduling
  - Check lists
  - Direct observation
    - Transcription

PaTTAN Autism Initiative
Site Review Form
Annotated with Scoring Criteria

Site Number/Name:		Date:	
Teacher:		Staff/student ratio:	
Reviewer:			
Consultants:			
Other staff:		Pre/Post?	

Classroom Organization	Yes	No
1. Chart for student schedules? Must correlate with observed pattern of instruction for 2 students at 2 observational checks.		
2. Chart for assignment of staff schedule? Must correlate with observed pattern of instruction for one staff at 2 observational checks.		
3. One or more ABA/VB cues posted?		
4. Regular team meetings?		
Classroom environment		
5. Is the classroom neat and organized?		
6. Is access to reinforcers controlled by staff		
7. Is seating appropriate for children?		
Arrangement of instructional materials and materials organization		
8. Are the drawers or other storage areas for instructional materials labeled and organized?		
9. Are materials readily accessible to instructor?		
10. Is a card sort system in place for intensive teaching?		

Data Systems Note: For any site reviews completed in fall, on all items involving data, the data system must be in place for at least 10 days prior to site review to receive credit. One exception to this guideline is when site reviews are completed in the first 5-12 days of a school year; in that circumstance, all days of school except first 3 days, need to have data in place. To receive credit for data systems in the spring site review, data systems must be in place for at least six weeks and have current data (within three days of the site review).		
11. Are program notebooks available?		
12. Are notebooks arranged systematically?		
13. Are language programs balanced and appropriate? (must have 2/2 below)		
a. Include at least 3 verbal operants and/or advanced language programming?		
b. Programs listed are consistent with compiled data and with VB assessment levels.		
14. Is there behavior data for all students who present significant problem behavior, which includes a definite count of a behavior targeted for reduction? (i.e., frequency count of problem behavior preferred but can also include a consistently recorded ABC format.)		
15. Is there mand data related to mand acquisition? (cold probe)		
16. Is there mand data related to mand frequency?		
17. Data discriminative stimuli for instructional behavior?		
18. Are there 3 or more graphs for all of the students?		
19. Is the entire VB-MAPP Assessment, or other appropriate assessments (such as ABLLS sections A-F,) completed for all students or are other quantitative evidence based curricular measures completed?		
20. Is there data on any other instructional program or formative assessment tool (i.e. Language for Learning, sequenced handwriting curriculum, etc.)		

Consultation/Training Process	Yes	No
21. Is there a system of training of ABA/VB content (relevant to instruction, social skill training, and addressing problem behavior) that includes a manual, set procedures or regular meetings? Evidence of this item needs to be documented.		
22. Has the consultant (PaTTAN consultant and Internal Coach) provided guided practice in the classroom?		
23. Is teaching behavior defined in set procedures? Does consultant (PaTTAN Autism Initiative consultant and Internal Coach) focus on the teaching behavior of the staff?		
24. Concern for treatment integrity ? Does the consultant (PaTTAN and Internal coach) taken data on teaching procedures?		
Parent/Family Engagement	Yes	No
25. Is there a system of training for parents, caregivers, and other community members that regularly interact with the students? Evidence of this item needs to be documented.		
26. Is there a system of communication with parents/caregivers*? 2/2 of the following criteria must be met to receive credit for this item.*		
a. Communication is designed to keep parents informed about their child's specific program and progress.		
b. Communication allows parents to provide feedback and information to teacher.		

Inclusive Practices	Yes	No
27. Are students engaged in instruction that is similar to students in the general education setting? *3/3 of the following criteria must be met to receive credit for this item.*		
a. Are there verifiable supports (supplementary aids and services) to maintain or establish meaningful participation in the general education setting? *(must include evidence of collaboration for all students to receive this score)*		
b. Data systems in place to monitor student participation and progress.		
c. Are specific identifiable plans in place to increase participation in the general education setting for all students not fully included		
28. Are the materials used with the students in general education setting similar to those used with other students (perhaps modified)? If students are not in the general education setting are they being provided with experiences with the materials that will allow them to function in the general education setting*?*		
29. Do the students have access to non-disabled peers? If not in the general education setting, students are provided with the opportunities to learn and practice the skills related to social activities*?*		
30. Practices promote self advocacy skills. This would be defined as control of environmental variables that promote communication goals in relation to student needs.		
31. Instructional content is relevant to that provided in the general education setting.		

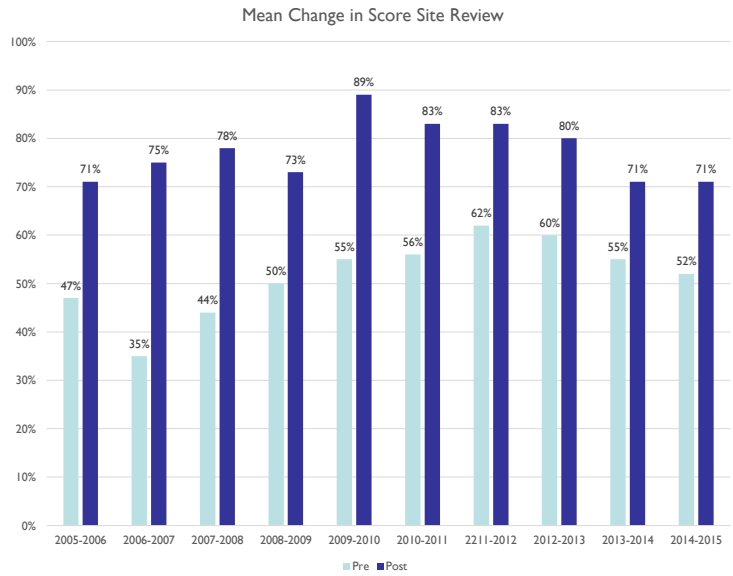
Instruction	Yes	No
32. Is staff paired as conditioned reinforcers or is there evidence of staff directly conditioning adults as reinforcers?		
33. Instructional control?		
Mand Training		
34. Form selection procedures (vocal, selection-based, sign)		
35. Density of opportunity:		
36. MO manipulation *(capturing and contriving MO)*		
37. Shaping.		
38. Mand prompt system:		
39. Staff provides mand discrimination opportunities by varying reinforcers used in mand training.		
Intensive teaching: *Observe a five minute session of intensive teaching. Transcribe the teaching on attached form and use the data to answer the questions below.*		
40. Mixed and Varied *(covering at least 3 Verbal Operants during session)*		
41. Easy Hard ratio *(range between 60/40 and 85/15)*		
42. Prompting and transfer trials		
43. Errorless teaching trials.		
44. Transfer across verbal operants		
45. Trials/min.		
46. Variable Ratio Schedule of Reinforcement.		
47. Stimulus control		

Natural Environment Teaching		
48. NET is guided by variables related to motivation.		
49. Evidence that NET is planned and systematic.		
50. The natural environment is prepared to allow students to access learning opportunities (appropriate materials are available, reinforcers available, environment adequately 'sanitized" or 'enriched" depending on purpose of NET)		
51. NET Data:		
52. Instruction includes systematic procedures		
Other instructional methods (observe actual instruction or data collection)		
53. Use of appropriate vocal training processes. Differential reinforcement of vocal responding, stimulus-stimulus pairing, Kaufman procedures, or other vocal training.		
54. Direct instruction (Language for Learning, Reading Mastery, etc)		
55. Fluency or precision based teaching (timed trials, celeration charting)		
Group Instruction		
56. Group instruction *"Groups" include two or more students.*		
a. Group responses *(i.e. choral responses)*		
b. Clear targets *(instruction is derived from a skill sequence or curriculum)*		
c. General engagement *(judgment call but can be formalized through a time sample or a count of responses per minute)*		

Social Skills Training	Yes	No
57. Social Interaction Instruction (direct teaching of social skills; two of 4 of the following). Any evidence of directly teaching children to interact with each other, including using peer to peer mand procedures, establishing peers as conditioned reinforcers, teaching peers to play with one another.		
a. Peers as conditioned reinforcers. Systematic procedures used to increase approach behavior from one student to other students.		
b. Peer to peer manding. Must be structured and implemented regularly, should also include data		
c. Play skills or leisure skills taught.		
d. Is a hierarchy of social skills established, assessed and taught?		

Behavior Interventions NOTE: Are any students at site presenting behaviors that are targeted for reduction: Yes/ No. If no problem behaviors reported, complete this section as a review but do not include it in final percentage of implementation calculation. Be sure that the reported lack of need for problem behavior reduction is consistent with what is observed in the classroom. Only drop this item from scoring if the site reviewer does not observe any problem behavior during the review process. If problem behaviors are observed and none are reported above, note problem behaviors observed: _____	Yes	No
58. Is there an FBA on file for all students who present with significant problem behavior? *This process must yield a stated functional hypothesis?*		
59. Problem Behavior Interventions (5 of 7 items must be scored as present) Complete this section based on review of one student's behavior problem programming.		
a. Target behaviors well defined *Behavioral definitions*		
b. Functional response classes identified?		
c. Interventions derived from and match function*?*		
d. Clear plan?		
e. Treatment integrity?		
f. Systematic staff training prior to implementing plan?		
g. Is intervention observed to be implemented consistently?		
60. Data and graphing of target behavior/interventions? *Are there graphs that reflect data regarding the course frequency of behavior over time as a result of the intervention? Evidence of at least one graph for a reductive behavior intervention is sufficient. Do not score this item if item number 57 is omitted by criteria.*		
61. Problem Behavior Intervention Design: *Interventions must have 3/3 scored as present. Do not score this item if item number 57 is omitted by criteria.*		
EO manipulation		
Teaching alternative behavior within response class?		
Extinction		

Scoring Rubric		
Total Number of Items Scored		
Total items on Site review		Total Items 61
Items Omitted by Criteria	Circle all omitted and total: 10 14 20 53 54 56 57 58 59 60 61 Total Omitted= _____	Minus Total Omitted _____
Total Number of items scored	Subtract Total omitted from Total Items	Total Administered = _____
Total Number of items scored as "Yes"		Total scored "yes" = _____
Percent of items implemented	Divide the total number scored yes by the total number of items administered and multiply by 100.	Total scored "yes" = _____X 100= Total Administered =
		SCORE:



Systematic Instructional Feedback

Purpose of Systematic Feedback

- Reduce ambiguity in the consultative process
- Increase procedural compliance
- Increase the probability of consultation functioning to alter student repertoires
- Serve as a permanent document that can be shared with all team members
  - used for staff training
  - verifying changes in fidelity of implementation over time

Specific Guidelines for Providing Effective Feedback

1. Observe/Collect Data
2. Analyze/Interpret
3. Give Feedback:
   - –State where adherence is consistent
   - –Be constructive
   - –Be concrete, specific, and include quantitative data
   - –Provide clear procedural descriptions
   - –Set instructional targets and clear expectations for follow-up consultation

PaTTAN Autism Initiative ABA Supports
Consultation Visitation Summary

Date of Visit: _____ **Classroom:** _____
Time in class from: _____ **to:** _____
Consultant's name/ Internal Coach name:

Topic #1:_____
Observation/Data (Section from site review):

_____
_____
_____

Interpretation/Hypothesis:

_____
_____
_____

Recommendations:

_____
_____
_____

_____	_____	_____
Consultant Initials	**Teacher Initials**	**Internal Coach Initials**

Sample Consultation Notes

Interpretation/Hypothesis:

You already have so many components of effective teaching in place. Because of that, it doesn't surprise me that a student with such a strong history of behaviors to escape demands demonstrated good responding during the session. The components that were obviously present were: valuable reinforcement available, materials well organized and ready, fast-paced instruction, varying your S^d's (for example when doing match to sample, you didn't always use the same S^d, but rather varied it by saying "match", "find the same", "where does this one go?", etc), ending your session on a good response and contact to reinforcement. There were a few moments when the student engaged in off-task behavior and you responded adequately by not allowing him to escape your instruction. By incorporating other teaching procedures you might be able to get even better responses from your student and reduce his motivation to escape. Some of those other components are: fading in demands during instruction (number and difficulty), using a VR based on individual student needs, and using errorless teaching.

Sample Consultation Notes

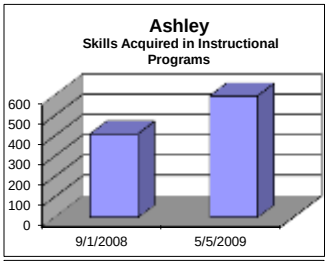
Here is an example of the procedure:

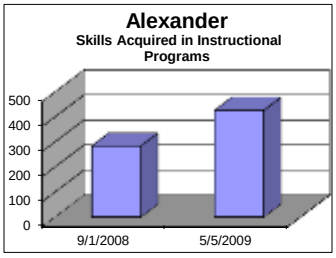
Teacher Student
What is it? Cat------ Cat
What is it?------- Cat
Touch your head ------ Touches head
Clap your hands----- Claps hands
What is it? ------- Cat REINFORCE!!!
REINFORCE!!!

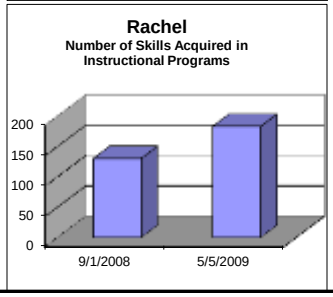
In the event that the student makes an error at any time (throughout the procedure or during your run through), you do exactly the same procedure (go back to square one). See example below:

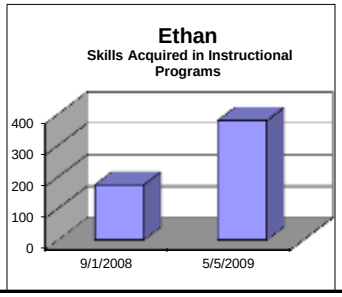
Teacher Student
What is it? (while showing a cat)----- Ball
What is it? Cat------ Cat
What is it?------- Cat
Touch your head ------ Touches head
Clap your hands----- Claps hands
What is it? ------- Cat REINFORCE!!!

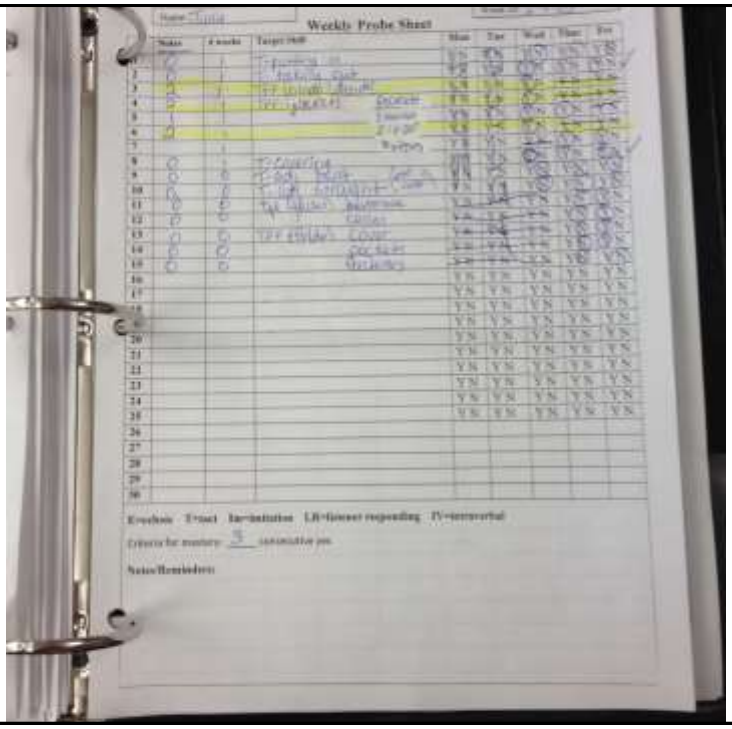
Site	Total Notes Received in 2008-2009 School Year	Average Notes Per/Month
Elementary School A School District	133	14

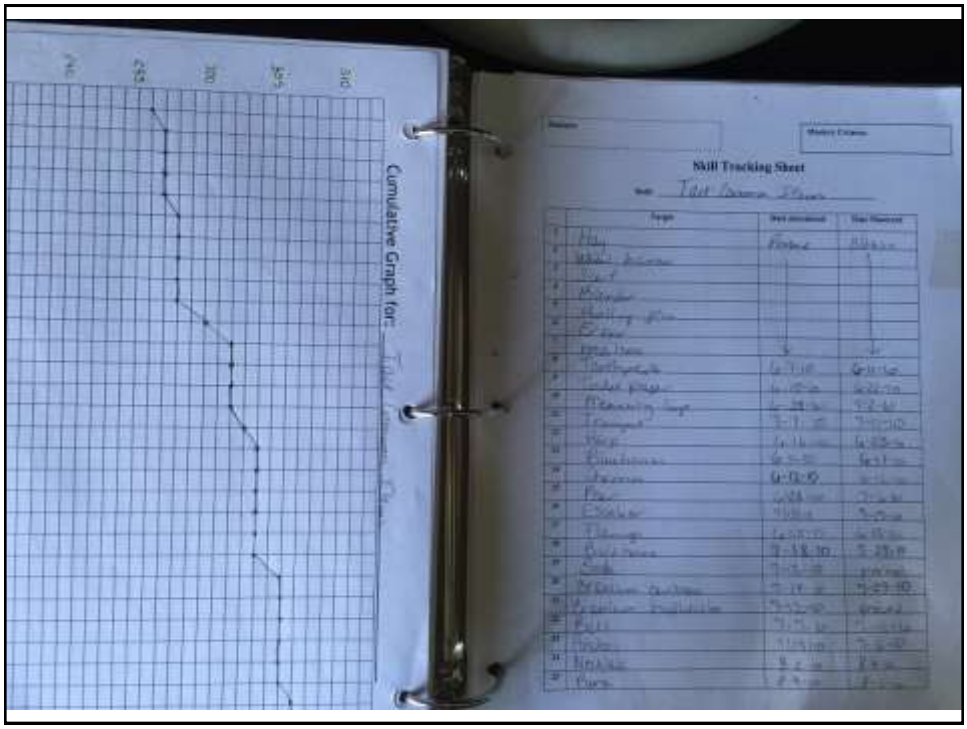


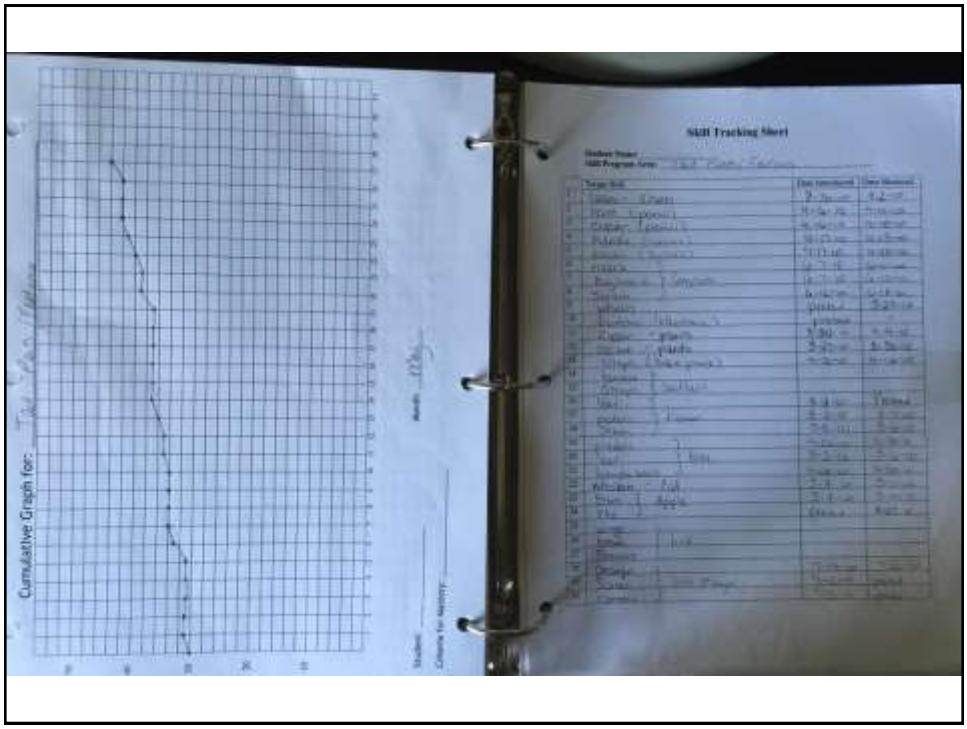


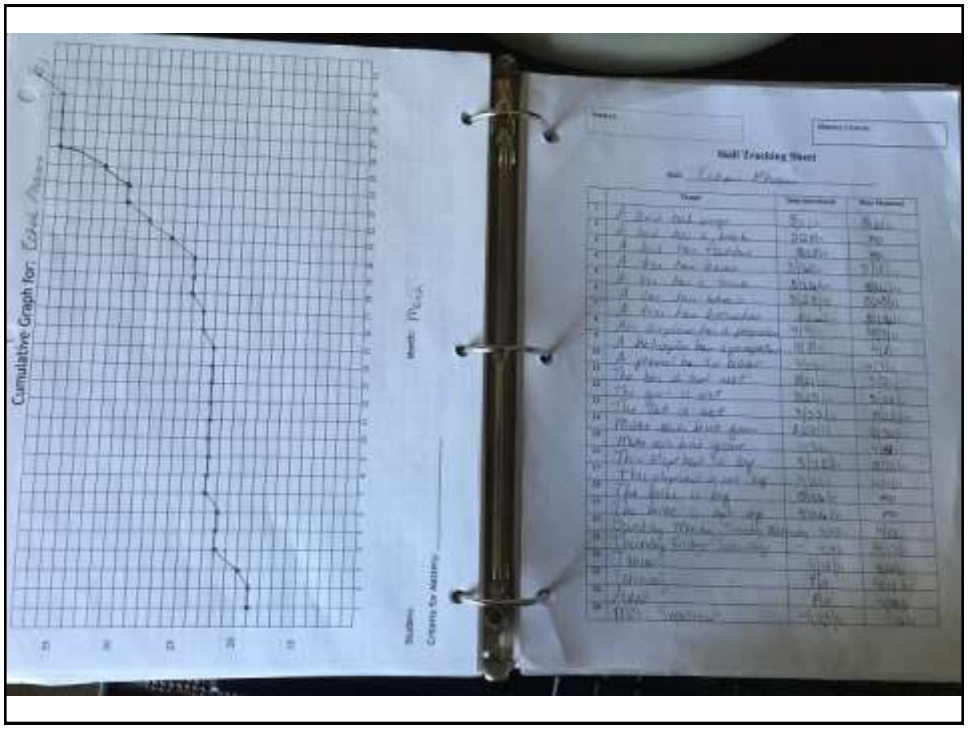


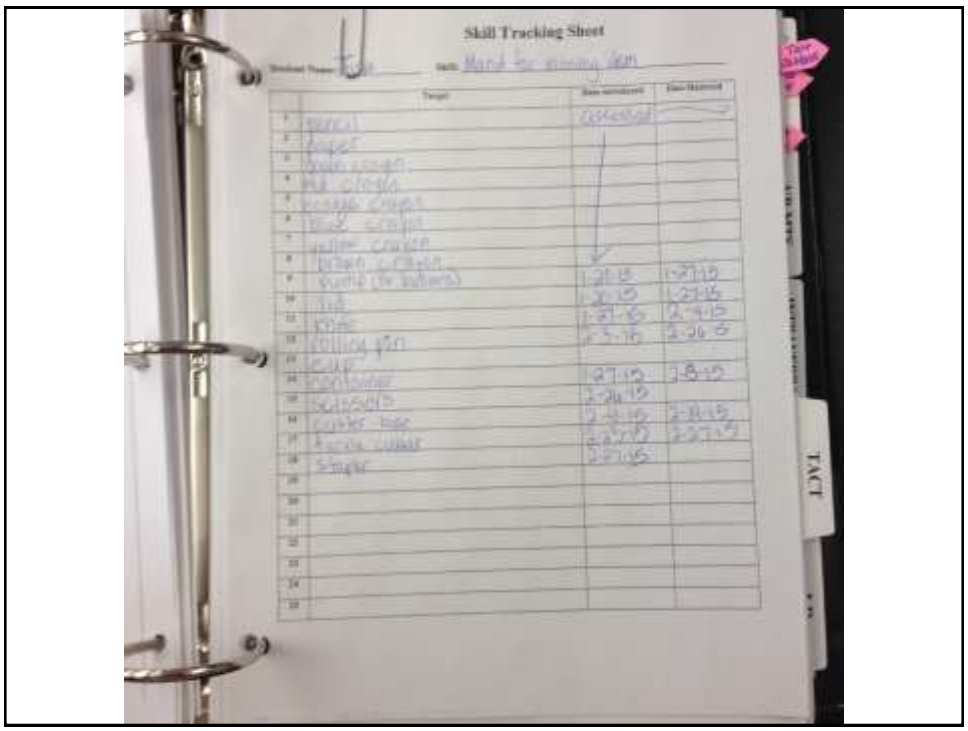


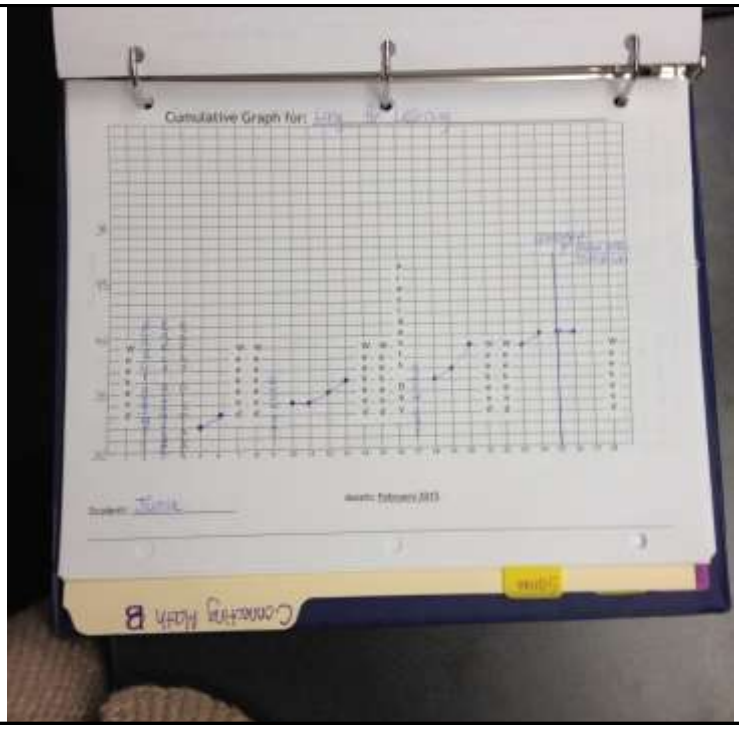



Cumulative Graph for:
Skill Tracking Sheet


Cumulative Graph for:
Skill Tracking Sheet


Cumulative Graph for:
Skill Tracking Sheet


Skill Tracking Sheet
TACT



Demonstrations and Overview of Key Instructional Practices

- Intensive Teaching
  - Errorless teaching
  - Error correction
  - Card Sort
  - Data Systems
- Mand Training
- Direct Instruction
- Social Skills
  - Peer to Peer Manding
- Group Instruction
- Problem Behavior Reduction

Integrity Observations used for Feedback

1. Transcription of intensive teaching
2. Transcription of mand training
3. Treatment integrity checklists

TRANSCRIPTION

An Introduction to Intensive Teaching

- Discrete trial instruction using a mixed and varied format
- Emphasis on teaching verbal behavior
- Video example

Components of Effective Instruction

- Mix and Vary Tasks
- Teach to Fluency
- Fast Pace/Low Inter-Response Interval
- Reduce Errors/Errorless Procedures (PTDC)/Effective System of Prompting and Prompt Fading
- Error Correction (EPTDC)
- Dense Schedule of Responding
- Intersperse maintenance and acquisition responses
- Adjust schedule of reinforcement: VR
- Attention to motivative variables

Sample Consultative Feedback using Transcription of Intensive Teaching

Shannon with Leah:

Run	Transcription of demands/responses	Trials	Analysis/Recommendations
1	T I R R $(T^{-P}\ T^{M})$ E I R T T $^{\surd}$ Sr^{+}	10	Nice pace of instruction, use of the cards to guide instruction, and mixing and varying your demands. You also did a great job at immediately correcting the error and providing reinforcement of the independent response (check trial). **Just remember to END THE TRIAL when the error occurs. So in the case of the tact error, you want to put the card away for 1-2 seconds and re-present the S^{D} with a "0" second prompt.**
2	E IV R T T T $(T^{P}\ T^{M})$ R E T $(T^{\surd}\ T^{P}\ T^{M})$ T R IV T $^{\surd}$ Sr^{+}	15	Beautiful run!!! Great use of errorless teaching procedures and error correction. You also remembered to end the trial and start over with an errorless procedure when she made an error on the check trial.
3	R E T $(T^{P}\ T^{M})$ R T $^{\surd}$ Sr^{+}	6	Nice set of run throughs with flawless errorless teaching procedures. Just make sure you are varying the number of trials you present to avoid predictability reinforcer delivery and maintain the **variable** ratio
4	E R T $(Tx^{P}\ Tx^{M})$ R T $^{\surd}$ Sr^{+}	6	
5	R T $(Tx^{P}\ Tx^{M})$ I R T $^{\surd}$ Sr^{+}	6	

Total Run Throughs= 5 | **Total Time**: 3 minutes | **Total Trials**= 43

Intended VR= 5 | **Actual VR**= 8.6 | **Response/Min**= 14 | **Easy/Hard**= 86/14

Other Notes:
Impressing session overall. Biggest precaution is the VR. Remember you want to reinforce on average of 5 responses. So when you have longer runs (like first run), make sure you only do a few trials on the next run.

Transcription code:
M: mand
T: tact
R: receptive
IV: intraverbal
Im: imitation
MS: match to sample
E: echoic
Tx: Text (reading)
Ma: Math
Sr^{+}: reinforcement
^{P}: prompt
^{PP} partial prompt
^{TR}: transfer trial
$^{-}$: error
^{NR}: no response
$^{\surd}$ check trial
$_{VP}$: verbal praise
^{SA} shape articulation
$_{(time)}$: run through ended due to wait time
^{SC}: self-correct

Some Background on Previous Codes for VB

- Potter, Huber, and Michael, 1997 : protocol analysis, similar notation system used.
- Drash and Tudor, 1991: standard methodology for analysis, recording and control of VB: rate of response and probability of verbal response: analysis of response to a stimulus evoking verbal behavior: 1 emit correct 2 emit incorrect 3 emit no response 4 emit inappropriate verbal behavior such as screaming
- John Esch (personal communication) used a code similar to transcription at Kalamazoo Valley Multihandicapped Center)

Transcription Reliability Study (as of 4/12/06)

Review of 14 pairs of transcriptions (inter-observer agreement)

- 97% agreement on number of run throughs
- 98% agree on number of trials
- 84% agree (point by point) for identification of specific type of trial
- 76% agree on occurrence of error correction
- 96% agree on non-occurrence of errors (corrects)

Value of Transcription

- Objective feedback of instruction
- Immediacy of feedback
- Can compare present performance to past or future performance
- Provides some data on student performance

What Behaviors are Coded?

- Purpose of the code is to evaluate instructional behavior, therefore determination of criteria for types of trials is derived primarily by the teacher's behavior : observer must determine type of instructional trial
- Student's behavior is coded as it relates to the instructional behavior emitted by the teacher: generally correct or error response

Administration: Materials

- Transcription protocol and clipboard
- Timing device, such as a stop watch or small digital kitchen timer
- Pen or pencil

Timing

- Each run through should be timed using a standard timing device such as a stop watcell phone, or kitchen timer. In order to complete timing of instructional strands ch, (run-throughs) the following steps are necessary:
  - Note the time instructor presents the first discriminative stimulus in run through and start timing device.
  - Stop timing when reinforcement is presented.
  - Note the total duration of the run-through in seconds on the recording sheet

Practice Timing

- For the following presentation, time the run run-throughs.
  - Live role play
  - Video example

Scoring Codes

- Review of basic codes
- Review of superscripts and subscripts

Primary Codes:

T= Tact

IV= Intraverbal

E= Echoic

M= Mand

TC= Task Completion

I= Imitation

LR= Listener Responding

MS= Match to Sample

Tx= Textual

Sr+= Positive reinforcement

Sr-= Negative reinforcement

Superscripts:

P= Prompted responses

tt= Transfer Trial

√= check trial

pp= Partial Prompt

None = easy/correct response

- = error

nr = no response

? = uncertain coding

↓ = Fade to lesser prompt

Optional Superscripts

- Type of prompt:
  I = imitative prompt
  LR = listener responding prompt
  MS = receptive prompt
  T = tact prompt
  E = echoic prompts

No Superscript

- A trial in which the child emits a correct response and is given no prompts is coded without a superscript
- A count of all coded trials without superscripts provides a measure of "easy trials."

Subscripts:

pb = problem behavior

vp= verbal praise

Io = imitate with objects

Im =or motor imitation

… = time pass between trials

// = break in transcription

3 or other number= number of steps (e.g. TC_3)

fe= feature

fn= function

fc= class

Uncertain Coding

- Use a ? as subscript or superscript whenever uncertainty exists about a response (not sure if it was correct, not sure if it was prompted, etc)

Problems in Implementing Transcription

- VB can occur as discrete units controlled by singular antecedent stimuli ("pure operants") but most VB is not so simple
- Real world VB multiply controlled (under the stimulus control of multiple aspects of the environment) and continuous (stimulus changes including those produced by the speaker occur throughout the entire time such behavior is emitted)
- Verbal behavior used during instruction may be difficult to classify into discrete units due to multiple control issues

What To Do About Multiple Control?

Rule of thumb:

- Instructor mands to engage in a particular operant are not considered in classifying type of trial.
- Transcriber makes a judgment for trial type based on the observers' familiarity with the intended instructional target e.g. color of card used.
- Do not score the emission of mands by the teacher for particular classes of operant behavior as a primary operant.
- Saying "do this" is a mand for the student to engage in imitative behavior and would not be scored as a receptive trial.
- "What is it?" is disregarded as exerting IV control within a trial in which the student is asked to tact a picture, object or their parts. Rather, the trial is coded as a tact trial.

For Imitation, Listener Responding and Match to Sample

- If the trial having both receptive and MS characteristics is followed by a transfer to a receptive, it was likely a prompted receptive trial.
- If the trial having both receptive and MS characteristics is followed by a transfer to MS, it was likely a prompted MS task.
- You can always ask the teacher between run-throughs what type of trial she was running.
- This distinction is relevant to instruction

Optional Subscripts

- Can jot down item content as subscript if possible or necessary.
- Example: (T^{-}_{dog} T^{p} T^{tt})

- vp = verbal praise

A Note on Subscripts

- If instruction is fast paced or otherwise chaotic, it may not be possible to use subscripts, therefore remember that these codes are optional
- It can be decided in advance whether to use certain subscripts depending on the reasons for completing the transcription (for example how much verbal praise is used may be an issue or their may exist a concern about how often the child does not respond to Sds)

Practice Reading Scripts

Read the following scripts

Transcription #1

I E E LR LR LR LR (LR^{-P} LR^{tt}) MS MS S^{r+}

How many trials?

How many Easy Trials?

How many Hard trials?

Transcription #2

M T E MS MS I_o I_m (MS^{-} MS^{P} MS^{tt}) T T
IV MS$^{\surd}$ LR LR T T T T T E (M^{-P} M^{tt})…

How many trials?
How many Easy Trials?
How many Hard trials?

Transcription #3

(E^{-}E^{P}) E$^{?}$ (E-E^{P}) T^{-} LR^{-} LR^{P} MS$^{PR?}$ Tx^{-nr} Tx^{-nr} TC_{12} Sr^{-}

How many trials?
How many Easy Trials?
How many Hard trials?

Transcription #4

$I_o\ I_o\ I_m\ I_{m\ vp}$ LR LR $_{PB}$ LR_{vp} LR_{vp} MS_{vp} I_o $_{vp\ PB}$ LR S^{r+}

How many trials?

How many Easy Trials?

How many Hard trials?

Transcription # 5

LR LR (LR^{-} LR^{p} LR^{tt}) I (LR^{-} LR^{p} LR^{tt}) I I LR Sr+

How many trials?

How many Easy Trials?

How many Hard trials?

Transcription #6

M T (T^{P} T^{tt}) I_m LR $T^{\surd}$ MS T LR
(E^{P} E^{tt}) T IV I_m $E^{\surd}$ M Sr+

How many trials?
How many Easy Trials?
How many Hard trials?

Practice Transcription

- Role played instruction
- Instruction from video
  - Candice with Natalie
  - Amiris with William

Some Adaptations

1. Don't fret if you feel like you are not able to do all components of scripting immediately: it takes practice
2. You can use various components of the scripting process in isolation

Scoring a Transcription Session

- Count number of run throughs
- Add up total duration of run throughs
- Count up total number of responses (trials)
- Divide number of responses by number of run throughs to establish Variable Ratio Schedule
- Divide number of responses by total duration (use minutes and fractions of minutes)
- To obtain minutes: add up duration of all run throughs in seconds and divide by 60

Scoring a Transcription Session: Determining VR

- Count total number of trials
  - (include mand trials
  - count all information within parenthesis as one trial
- Determine number of run throughs
- Divide number of trials by number of run throughs to yield a quotient reflective of average number of trials per run through. That figure is your VR.

Example of Calculating Easy to Hard Ratio

1. T T I IV (E^{p} E^{tt}) T $E^{\surd}$ M = 8 trials, 7 easy, 1 hard
2. LR LR T LR^{P} T I (IV^{-} IV^{P} IV^{tt}) E T $IV^{\surd}$ M = 11 trials, 9 easy, 2 hard
3. T M ($E^{-}E^{p}$ Ett^{-} E^{p}) T LR (E^{p} E^{tt}) LR I LR $E^{\surd}$ S^{r-} = 10 trials, 8 easy, 2 hard

Total number of trials = 29 trials
Easy trials= 24
Hard trials = 5
(24 easy ÷ 29 total)x100= 82.8% Easy
(5 hard ÷ 29 total)x100= 17.2% Hard
Ratio of Easy to hard = 82.8 Easy to 17.2 Hard (pretty close to 80/20)

Providing Feedback from a Transcription Session

- First do all calculations (easy hard, VR, Trials per minute, degree of mix and vary, degree to which errorless procedures were followed; per cent of teaching trials)
- Present the numbers from your various calculations with the consultee
- Discuss obtained results in relation to established procedures and individual student programming
- In some cases allowing consultee to interpret results will reduce need to have suggestions come from consultant
- Define actions to be taken
  - Train or re-train procedures flagged as problematic through transcription
  - or, if necessary, make adjustments to student programs

Transcription Worksheet/Feedback

Date	Instructor: _____ Student: _____Set VR: ___ Observer: _____ Start time: ____End time: ____ Total Time: _____				
Run Thrs.	Transcription	Seconds per trial	Hard Trials	Easy Trials	Total Trials
	Total Trials				

Total time of run throughs =		***%Easy responses /total trials=*** Total unprompted trials/total number of trials X 100	***E***	**%**
Total # responses = Prompted & error trials = 1 (R² R²) or (R R² R²) or similar error sequences.				
Total # responses/ total run throughs= ____ / ____	***VR***	***%Hard responses / total trials=*** Total prompted & error trials/total number of trials X 100	***H***	**%**
Responses per minute = Total number responses/total minutes ○ Divide number of responses by total duration (use minutes and fractions of minutes) ○ To obtain minutes: add up duration of all run throughs in seconds and divide by 60	***/min***	***Percentage of teaching trials=*** Total number teaching trials /total number of trials X 100 ○ Count number of 0 second prompt trials: (teaching trials)		**%**

Mand Transcription

Mand Transcription

- Process similar to IT transcription
- However, code is on a trial by trial basis
- Antecedent Behavior Consequence

Codes for Mand Transcription

M = mand
NR = no response
M^{p} = prompted mand
M^{tt} = mand transfer trial
P = pairing trial
M^{-} = mand trial wrong response
M^{+} = mand trial correct response
MO^{-} = item presented, no motivation
MO = item presented, motivation present
Sc = scrolled response
≈ = approximation
Sh= Shape better response

I = Item present
Sr+ or Sr-
No Sr
ET= End Trial
n=neutral
Response Form:
V = vocal
S = sign
AD= augmentative device
P = selection based

Antecedent	Behavior	Consequence	Item
MO PTr	NR	Sr^{+}	Ball
MO M^{p}	M^{+} voc	Sr^{+}	Pretzel
NoMo	M^{-} sg	No Sr	Chip
MO M^{s}	Mpex	Sr^{+}	Spider

Mand Transcription Sample

MAND Transcription	Item Requested	Comments
MO (Mp Mtt) Sr+	Car	Good use of transfer trial
MO M Sr+	Car	
MO Sr+	Monster truck	Great job freely giving items. Make sure you label it as you give it.
MO M Sr+	Gummy	Nice use of differential reinforcement
MO M Sr+	Gummy	
MO (Mp) Sr+	Car	Move the car closer and wait for a transfer trial.
MO M Sr+	iPad	Good shift of MO

Treatment Integrity Checklists

Developing Treatment Integrity Checklists

- First develop procedural descriptions of intervention or protocol
- Select critical aspects of protocol to be observed
- Be sure each line is observable
- When possible tie to actual measures (quantitative rather than qualitative measures
- Multiple arrangements possible for completion:
  - Third party observer (consultant, internal coach, administrator)
  - Teacher observes staff
  - Self report (best with intermittent fidelity checks)
- Design with user in mind

Motor Imitation Procedural Fidelity Checklist

Date: _____ **Instructor:** _____ **Student:** _____

Observer 1: _____ **Observer 2:** _____ **IOA%** _____

		YES	NO	N/A
Organization	1. Is instructional area neat and sanitized?			
	2. Does instructor have all materials needed for instruction organized and ready?			
	3. Does instructor have a variety of valuable reinforcers available?			
Teaching Procedures	4. When teaching, does instructor present the S^D and prompt the correct response?			
	5. Once the student complies with the prompt, does the instructor re-present the S^D with no prompt or a faded prompt (transfer trial)?			
	6. Is transfer trial followed by distractor(s)?			
	7. Following distract trials, does the instructor re-present the S^D with no prompt or a faded prompt as presented in transfer trial (check trial)?			
	8. Does instructor model the action to be performed for the prompt, transfer and check trials?			
	9. Does instructor reinforce at set VR schedule? VR:_____			
	10. Does instructor use a prompt that results in correct response?			
	11. Does instructor differentially reinforce (better reinforcement) target responses?			
Error Correction	12. Does instructor end the trial and ensure student is in neutral position (use ready hands if needed)?			
	13. Does instructor re-present the S^D and prompt the correct response?			
	14. Does instructor prompt student if no response occurred within 2 seconds for a previously mastered item?			
	15. Does instructor model the action to be performed for the prompt, transfer and check trials during error correction?			
Notes:		____ /15 Percentage of Y's:		

Kaufman Procedural Fidelity Checklist

Date: _____ **Instructor:** _____ **Student:** _____
Observer 1: _____ **Observer 2:** _____ **IOA%** _____

	YES	NO	N/A
1. Does instructor review shell levels?			
2. Does instructor identify and review the last shell level student was successful for before starting session? (instructor can accurately say them)			
3. Does instructor identify a strong reinforcer and show it as a promised reinforcer at the first trial?			
4. Does instructor present the first trial at the last level student was successful at?			
5. If correct, on first trial, does instructor move to the next shell?			
6. Does instructor continue to move up the shells with success?			
7. If adult form is imitated correctly, does instructor show the picture (if applicable) and deliver the reinforcer? (differentially reinforce)			
8. If student does not imitate the word shell correctly, does instructor present the shell up to 2 more times? (3 trials total)			
9. If student responds incorrectly on the next 2 repetitions, does instructor model the highest level word shell that was echoed accurately?			
10. Does instructor praise student when he vocally matches the lower word shell and then moves on to the next word?			
11. If he does not meet parity of lower word shell, does instructor present an easy known word, reinforce, (less than if student met parity) and move on to the next word?			
Notes:	____ / **11** Percentage of Y's:		

Mand Training Procedural Integrity Checklist

Date: _____ **Instructor:** _____ **Student:** _____

Observer 1: _____ **Observer 2:** _____ **IOA%** _____

	Yes	No	N/A
1. Were a variety of mand items available including target items, mastered items and non-target items?			
2. Was it confirmed that an MO is in place for teaching items?			
3. Was the instructor consistent in identifying which mand items should be run as targets?			
4. On initial presentation of a target item, was a probe completed prior to teaching?			
a. Probe for MO			
b. If MO "yes", then probe for response			
c. If MO "no", no probe and move on to next item			
5. If MO was present, instructor modeled the adult form when presenting the item during pairing trials for targets and future targets?			
6. During the session, did the instructor avoid reducing MO by:			
a. Varying reinforcers and types of reinforcers?			
b. Stopping use of reinforce before it loses its value?			
c. Varying method of delivery?			
d. Providing mands trials on an unpredictable schedule of delivery?			
7. Were errorless (immediate prompt) procedures used for initial trials of target items?			
8. Did instructor systematically attempt to fade prompts?			
9. If a more independent response was achieved, did instructor provide differential (better) reinforcement?			
10. If an error occurred, did instructor run error correction?			
a. Remove reinforcer			
b. Neutralize/end trial (hands neutral if signer)			
c. Pause for 3-5 seconds			
d. Represent item with immediate prompt			
11. Did instructor run the teaching procedure **ONLY** for the items being targeted?			
12. Did instructor make sure to say the adult form of the word each time the item was delivered?			
13. Did instructor intersperse trials of mastered mands to provide variety and practice for at least 50% of the trials?			
14. Did instructor intersperse other types of trials and fun activities as appropriate?			
15. Did instructor deliver all other reinforcers that have not been mastered for free while modeling the name of the item?			
16. Did instructor present novel items/activities in an attempt to condition new reinforcers and maintain variety?			
17. If taking frequency data, did instructor set timer and collect prompted vs. unprompted mands?			
Notes:	___/17 Percent Correct:		

Teaching Signed Mands Procedural Fidelity Checklist

Date: _____ **Instructor:** _____ **Student:** _____
Observer 1: _____ **Observer 2:** _____ **IOA%** _____

		YES	NO	N/A
Organization	1. Is the instructional area neat and clean?			
	2. Are all materials organized and ready?			
	3. Are a variety of potential manding items available?			
	4. Are initial mands of dissimilar topographies, not generalized, and selected from several different motivational categories?			
Teaching Procedures	5. Does teacher confirm the student has motivation for the item(s)?			
	6. Does the teacher model the sign, student imitates sign, and teacher delivers item?			
	7. Does the teacher provide the least intrusive prompt necessary for student success?			
	8. Does the teacher demonstrate dynamic responsiveness to student approximation of target?			
	9. Does the teacher AVOID the prompt "what do you want?"			
	10. Is the item name said many times and upon delivery of reinforcement during teaching procedures?			
	11. Does the teacher provide an adequate number of teaching trials per day?			
	12. Does the teacher run more than one mand during the session to provide discrimination opportunities?			
Error Correction	13. If error occurs, does teacher remove the reinforcer and attention?			
	14. After removing reinforcer/attention during error correction, does teacher pause for 3-5 seconds?			
	15. After the pause, does teacher re-present the item with an immediate prompt?			
	16. If student emits the correct response, does teacher reinforce and say the name of the item upon delivery?			
Data	17. Is there daily data and graph for mand frequency			
	18. Is there daily data and graph for mand acquisition?			
Notes:		___ / 18 Percentage of Y's:		

Natural Environment Teaching Procedural Fidelity Checklist

Date: _____ **Instructor:** _____ **Student:** _____
Observer 1: _____ **Observer 2:** _____ **IOA%** _____

		YES	NO	N/A
Organization	1. Is the instructional area neat and clean?			
	2. Are all needed materials organized and ready?			
	3. Does instructor begin promptly?			
Instructional Delivery	4. Does instructor follow the motivation of student?			
	5. Does the instructor use appropriate level of enthusiasm?			
	6. Does the instructor mix the verbal operants?			
	7. Does the instructor use errorless teaching with appropriate time delay?			
	8. Does the instructor average 4-5 responses per minute?			
	9. Does the schedule indicate recommended time per day in NET?			
Data Collection	10. Is the NET data sheet available?			
	11. Is NET data being taken?			
	12. Is NET data being graphed?			
SR+	13. Does positive reinforcer compete with negative reinforcement or automatic reinforcement?			
	14. Does instructor pair social reinforcement with the tangible items?			
Behavior Management	15. Does the instructor correctly implement extinction procedures?			
	16. Does the instructor maintain composure during procedures?			
	17. Does the instructor accurately record behavior data?			
	18. Does the instructor implement effective antecedent interventions?			
Error Correction	19. Does instructor re-present S^D followed by 0 second time delay after errors?			
	20. Does instructor return to target several trials later?			
	1. Does instructor require the correct response?			

3 minute sample of responses across verbal operants:

Mand	Tact	Receptive	Intraverbal	Motor Imitation	Echoic

Responses per minute: _____seconds per interval

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

___ / 21
Percentage of Y's:

Intensive Teaching Procedural Fidelity Checklist

Date: _____ Instructor: _____Student: _____
Observer 1: _____Observer 2:_____ IOA% _____

		YES	NO	N/A
Organization	1. Is instructional area neat and sanitized?			
	2. Does instructor have all materials needed for instruction organized and ready?			
	3. Does instructor have a variety of valuable reinforcers available?			
Teaching Procedures	4. Does session begin with delivery of reinforcement or an opportunity to mand?			
	5. Does instructor gradually fade in the demands/tasks presented?			
	6. Does instructor use fast-paced instruction (no more than 2 seconds between student's response and your next instruction)?			
	7. Does instructor mix and vary instructional demands (no more than 3 of the same operant/task in a row)?			
	8. Are easy and difficult tasks interspersed at the appropriate ratio? Easy/hard ratio: _____			
	9. Does instructor use a natural tone of voice?			
	10. Does instructor reinforce at set VR schedule? VR:_____			
	11. Does instructor use 0 second delay prompts for teaching targets?			
	12. Are prompted trials followed by a transfer trial, distractor(s), and a check trial?			
	13. Does instructor differentially reinforce (better reinforcement) target responses?			
	14. Does instructor differentially reinforce (better reinforcement) quicker and more independent responding?			
Error Correction	15. Does instructor re-present the instruction followed by a 0 second delay prompt when errors occurred?			
	16. Does instructor prompt student if no response occurred within 2 seconds for a previously mastered item?			
Notes:		___ /16 Percentage of Y's:		

Teaching the WAIT Protocol Procedural Fidelity Checklist

Date: _____ Instructor: _____Student: _____
Observer 1: _____Observer 2:_____ IOA% _____

		YES	NO	N/A
	1. Does instructor tell student "You'll have to wait" or some similar phrase based upon his/her skill level?			
	2. Does instructor begin counting aloud and show the passage of time by using fingers and saying, "Wait one, two, three…" as instructor holds up fingers (count will be predetermined based upon student)?			
	3. If problem behaviors do not occur during the entire counting interval, does instructor immediately deliver reinforcement?			
	4. If at any point during the counting student engages in problem behavior, does instructor restart the count?			
	5. Does instructor continue to restart the count until he/she is able to count the entire interval without student engaging in problem behavior?			
	6. If instructor repeats the count for many trials and student continues to engage in problem behavior, does instructor walk away if it is safe to do so?			
	7. If student moves away from instructor, does instructor make sure he/she remains safe, but does not follow and end count?			
	8. If at any point student re-approaches instructor, does instructor start the procedure over again?			
	9. Does instructor block self-injurious and aggressive behaviors?			
	10. If the schedule dictates, does instructor move on to another activity and thus student loses the opportunity to access the particular reinforcer?			
Notes:		___ / 10 Percentage of Y's:		

Promise Reinforcer Procedural Fidelity Checklist

Date: _____ Instructor: _____ Student: _____
Observer 1: _____Observer 2:_____ IOA% _____

		YES	NO	N/A
	1. Did instructor determine a reinforcer that Student wanted at the moment?			
	2. Did instructor hold the item so that it was visible to Student just before and as instructor presented instruction?			
	3. Did instructor present a clear direction Student was to follow? (i.e. "It's time to_____")			
	4. If Student complied with instruction within 4 seconds did instructor immediately deliver the promise reinforcer?			
	5. If Student did NOT follow the instruction within 4 seconds did instructor remove the item and follow through on the demand given (repeat instruction and prompt as necessary until compliance without problem behavior)?			
	6. If follow through was needed, did instructor make sure to have Student engage in at least 2 more easy responses before instructor re-instated reinforcement (and this reinforcement was not the original promise reinforcer)?			
	7. Did instructor provide better reinforcement for those trials with immediate compliance free of problem behavior?			
Notes:		____ / 7 Percentage of Y's:		

Summary

- Teaching well involves attention to detail
- Those who are aware of how they are teaching, generally get better results
- By artful use of data on instructional behavior, teachers will be more sensitive to how what they do effects student outcomes

Summary/Closing Comments

- *Sully Sullenberger's crew saved lots of lives through checking that procedures were followed. No one drowned in the icy Hudson.*
- *We can insure that many children with autism have better lives by making sure we help teachers follow procedures with precision! No students will fall into the icy abyss of inconsistent instruction…*

Contact Information

Mike Miklos mmiklos@pattan.net

Pennsylvania Training and Technical Assistance Network

6340 Flank Drive, Harrisburg, PA 17112

(717) 541-4960

1-800-360-7282 (toll-free in PA Only)

References

Brinko, K.T. (1993) "The Practice of Giving Feedback to Improve Teaching: What is Effective?" *The Journal of Higher Education,* 64, 574—598

Behavior Analyst Certification Board (2007). *The Behavior Analyst Certification Board Task List for Board certified behavior analysts working with persons with autism*. Behavior Analyst Certification Board: Tallahassee, FL

Carbone, V. (2003). Workshop Series: Teacher Repertoires Necessary to Teach Language and Basic Learner Skills to Children with Autism; Four Important Lines of Research in Teaching Children with Autism.

Carbone, V.J., Morgenstern, B., Zacchin-Terri, G., & Kolberg, L. (2007**).** The role of the reflexive conditioned motivating operation (CMO-R) during discrete trial instruction of children with autism. *Journal of Early Intensive Behavioral Interventions, 4,* 658-679.

Codding, R.S., Livanis, A., Pace, G., and Vaca, L. (2008) "Using Performance Feedback to Improve Treatment Integrity of Classwide Behavior Support Plans: An Investigation of Observer Reactivity." *Journal of Applied Behavior Analysis, Vol. 41, Iss.3; 417422*

References

Cooper, J. O., Heron, T. E. and Heward, W. L. (2007). Applied Behavior Analysis, 2cd Edition, Prentice Hall: Upper Saddle River, NJ

DiGennaro F.D, Martens B.K, Kleinmann A.E. A comparison of performance feedback procedures on teachers' treatment implementation integrity and students' inappropriate behavior in special education classrooms. Journal of Applied Behavior Analysis. 2007;40:447–461.

DiGennaro F.D, Martens B.K, McIntyre L.L. Increasing treatment integrity through negative reinforcement: Effects on teacher and student behavior. School Psychology Review. 2005;34:220–231.

Fleming, R. K., Oliver, J. R., & Bolton, D. M. (1996). Training supervisors to train staff: A case study in a human service organization. Journal of Organizational Behavior management, 16, 3-25.

Ford, J. E. (1984). A comparison of three feedback procedures for improving teaching skills. Journal of Organizational Behavior Management, 6, 65-77.

References

Gresham, Frank M.; Gansle, Kristin A.; Noell, George H.; & Cohen, Stacey. (1993) Treatment integrity of school-based behavioral intervention studies: 1980–1990. School Psychology Review, Vol 22(2), 254-272

Gresham, F. M. (2005). Treatment integrity and therapeutic change: commentary on Perepletchikova and kazdin. Clinical Psychology: Science and Practice, 12, 391-394.

Grow, L.L., Carr,J.E., Gunby, K. V., Charania, S, M., Gonsalves, L. & Ktaech, I. A. (2009) deviations from prescribing prompting procedures: implications for treatment integrity. Journal of Behaviorall Education, 18, 142-156.

Johnston, J. M. & Pennypacker, H. S. (1993) Strategies and Tactics of behavioral Research (2cd Ed.) Hillsdale, NJ: Erlbaum

Kazdin, A. E. (1998). Research Design in Clinical Psychology (3rd Ed.) Boston: Allyn & Bacon

Krumhus, K. M., & Malott, R. W. (1980). The effects of modeling and immediate and delayed feedback in staff training. Journal of Organizational Behavior Management, 2, 279-293.

References

Livanis, A., Benenuto, S., Mertturk, A., & Hanthorn, C. A. (2013). Treatment Integrity in Autism Spectrum Disorder Interventions. In Goldstein, J. A. & Naglierei, J. A. (eds.) Interventions for Autism Spectrum Disorders: Translating Science Into Practice, New York: Springer Science and Media.

Luiselli, J.K., Russo, D.C., Christian, W.P., Wilczynski, S.M. (2008). Effective Practices fo Journal Of applied Behavior Aanlysisr Children with Autism. Oxford University Press, Inc., NY

Machalicek, W.' O'Reilly, M. F., Beretvas, N., Sigafoos, J., Lancioni, G., Sorrells, A., Lang, R.& Rispoli, M. (20080. A review of school based instructional interventions for students with autism spectrum disorders. Research in Autism Spectrum Disorders: V2, 395-416.

McIntyre, L. L., Gresham, F. M., DiGennaro, F. D., & Reed, D. D. (2007). Treatment Integrity of school-based interventions with children in the Journal Of Applied Behavior Aanlysis 1991-2005. Journal of Applied Behavior Analysis 40 (4): 659-672.

Miklos, M. & Dipuglia, A. (2009) Mand training within the Pennsylvania Verbal Behavior Project: a training manual. Pennsylvania Training and Technical Assistance Network: Harrisburg, PA.

References

Miklos M, Dipuglia A, Galbraith W.**A** (2010). Changes in student performance: Case studies in verbal behavior within a large-scale public school project. 2010, May. Symposium presented at the 36th Annual Convention of the Association for Behavior Analysis, San Antonio, TX.

Moncher F.J, Prinz F.J. Treatment fidelity in outcome studies. Clinical Psychology Review. 1991;11:247–266

National Autism Center (2009). *National Standards Project, Findings, and Conclusions, Addressing the need for evidence-based practice guidelines for autism spectrum disorders.* National Autism Center: Randolph, MA

National Research Council (2001). *Educating Children with Autism.* National Academy Press: Washington, DC

Peterson, L., Horner, A. & Wonderlich, S. (1982). The integrity of independent variables in behavior analysis. Journal of Applied Behavior Analysis, 15, 477-492.

Roland, C. 1983. "Style Feedback for Trainers: An Objective Observer System. "*Training and Development Journal,* 37, 76-81

References

Sundberg, M.L. (2007) The Verbal Behavior Milestones Assessment and Placement Program. Concorde, CA: AVB Press

Volpe, R.J., DiPerna, J.C., Hintze,J.M. & Shapiro, E. S. Observing students in classroom settings: a review of seven coding schemes. School Psychology Review 34 (4), 454

Wheeler, J. J., Baggett, B. A., Fox, J., & Blevins, L. (2006). Treatment Integrity: A review of intervention studies conducted with children with autism. Focus on Autism and Other Developmental Disabilities V 21-1: 45.

Wilder D.A, Atwell J, Wine B. The effects of varying levels of treatment integrity on child compliance during treatment with a three-step prompting procedure. Journal of Applied Behavior Analysis. 2006;39:369–373.

Yeaton W.H, Sechrest L. Critical dimensions in the choice and maintenance of successful treatments: Strength, integrity, and effectiveness. Journal of Consulting and Clinical Psychology. 1981;49:156–167.